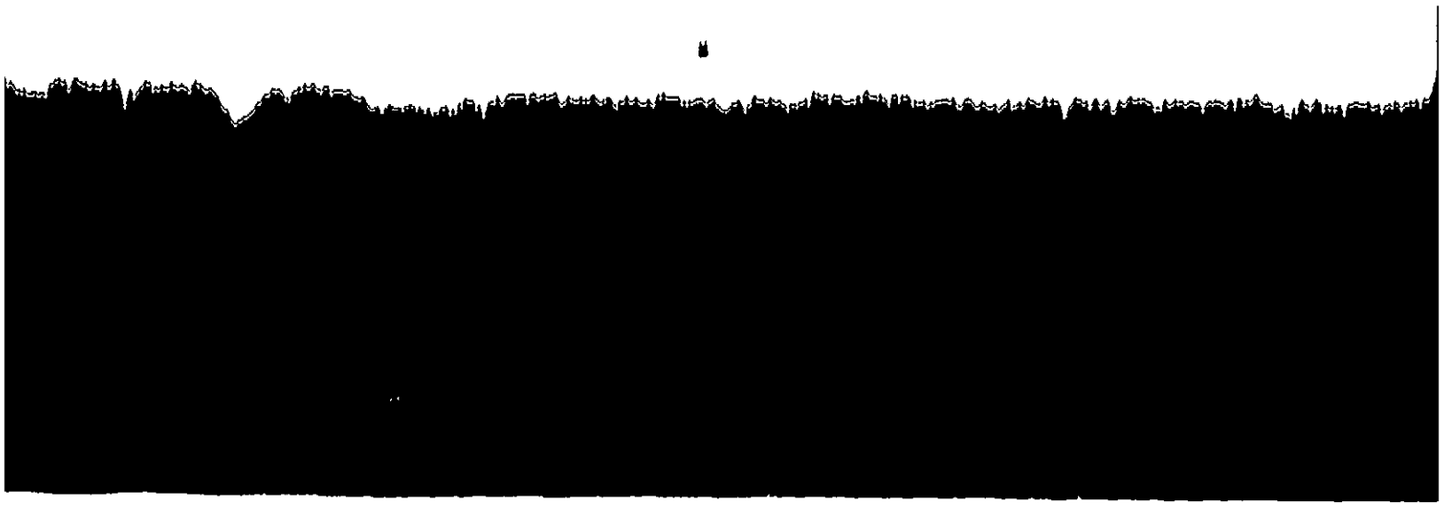

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EFFECTS OF LIVESTOCK GRAZING
ON WILDLIFE, WATERSHED, RECREATION
AND OTHER RESOURCE VALUES
III
NEVADA

APRIL, 1974

EFFECTS OF LIVESTOCK GRAZING ON WILDLIFE, WATERSHED, RECREATION AND OTHER RESOURCE VALUES IN NEVADA

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II. REPORT SUMMARY

Following the Nevada Interdisciplinary Resource Management Evaluation, April 2-13, 1973, a team was designated to conduct an in-depth analysis of the range management program and its conflicts with other resource programs in Nevada. The full cooperation of the Nevada State Office and Districts aided us materially in our work.

We concur in the findings of Work Sheet #1 of the WO Multi-Functional evaluation of April 2-13, 1973.

This report consists of individual activity reports, with illustrations and appendices, a series of 200 colored slides with brief narration, and responses to questionnaires.

While recommendations are included as part of this report, they are not all-inclusive, but may be of assistance to Districts and States.

A resume of principal identified problems follows:

1. The protection and enhancement of cultural values have not had sufficient attention in the past. Although improvements and awareness are indicated, greater emphasis needs to be applied to this subject.

2. Prevalent Juniper-Pinon stands have been allowed to thicken. Through the effects of this thickening and continued use by livestock and/or big game and horses, a continuing loss of carrying capacity is occurring. Vegetative manipulation projects have resulted in a lessening of these impacts in isolated instances; however, projects generally have not reduced pressure on the forage under the stands of trees nor increased the carrying capacity within untreated tree stands.

3. Vegetative manipulation projects have been tried in many areas. While often successful, they lack proper management after completion of the project. Frequent reinvasion of removed vegetation has occurred. We now have an index of where we can expect success, but employees are aware that the public is watching how we manage investments. Considerable time is spent checking these widely spaced improvements to prevent further deterioration.

4. Various degrees of effort have been expended on adjudications. Where areas were not reduced to the indicated carrying capacity, over-licensing problems still exist. In some areas reductions were made to survey carrying capacities, but time has proven surveys overly optimistic. The longer over-use continues, the greater the reductions needed to turn the ranges toward improvement.

5. The carrying of suspended nonuse following reduction has been excessive. This is particularly evident where active licensing is below the range survey carrying capacity. It is highly improbable that the large volume of regular and suspended nonuse can ever be satisfied if sufficient litter is left for watershed improvement. Better habitat conditions are needed for wildlife, forage is needed for horses and burros, and certain restraints from a recreation standpoint are needed.

6. We are hopeful that soon we can arrive at some multiple-use planning. Individual planning is being conducted by Range, Wildlife, Watershed, and Recreation; however, individual plans are not being pulled together because of a lack of coordination and cooperation between activities.

7. In Nevada, as elsewhere, there is a need to complete MFPs so action can be implemented on the ground. The Duckwater area is an example where immediate action needs to be taken.

8. Horse and burro feed requirements were not considered in range surveys. The same is often true for wildlife. This alone requires an entirely new analysis of forage needs for the habitat community.

9. Issuance of temporary nonrenewable licenses by Nevada Districts should be analyzed by the State Office. In our

opinion the reasoning for granting such licenses has not been carefully analysed. Additional feed is produced on areas that have been subjected to considerable vegetative manipulation. The granting of livestock permits have not fully considered litter needs for watershed and food and cover needs for wildlife.

10. We find that many AMPs are ineffective. Often AMPs were poorly designed with too few pastures, pastures grossly unequal in carrying capacity, and overall initial carrying capacity considerably lower than the amount of stocking to be applied to the area. This necessitated the breaking of grazing systems, especially in years of subnormal moisture. Many AMPs did not have sufficient studies established on them. Studies that were established have not been routinely continued. Actual use records are maintained in most instances. Allotments containing live streams gave no consideration for the riparian habitat.

It is very important that BLM have good, well designed, plans that work. We have informed the public that we can improve the lands through livestock management. It is important that we prove we have done so. Actual and factual information on areas under management may be useful in applying proper use on adjacent areas.

11. All Districts visited have a severe scarcity of personnel. Area Managers have 2 to 3 million acres under

their administration, and have only two to three other employees to assist them. These Districts have been severely hampered in their planning efforts by a lack of Recreation, Wildlife, or Minerals Specialists. Frequent changes of district personnel led to constant orientation problems.

III. RECOMMENDATIONS

We recommend that:

1. A new vegetative inventory be initiated which takes into consideration vegetative needs, by location, for all resource uses. Commencing with high priority areas a new Class I qualification be established, without consideration of suspended nonuse, and that this inventory be kept current and timely adjustment be made as needed.

2. Proper allowance of wild horse and burro AUMs be allocated with appropriate reductions in livestock grazing AUMs. This item should be given immediate attention.

3. Individual activity planning for geographical areas be replaced by a total resource plan with mutually acceptable objectives and methods for reaching these objectives within the constraints identified by the MFP, and that funding of implementation be for total plan needs and not activities.

4. A system be designed to aggregate and store all resource data by planning unit, resource area, District, State, and Bureau levels.

5. Present District organization be revamped, the resource Area Manager concept be eliminated, and a dual staff be established — one for technical input and another for administration.

6. The State Director should, after careful consideration of other resource needs, issue a policy on the granting of temporary nonrenewable licenses.

7. Rest-rotation training include, as an integral part of its presentation, grazing systems design that will benefit wildlife and insure adequate soil protection and enrichment.

8. AMPs be reviewed and updated, especially those developed prior to 1969 in accordance with recommendation #3.

9. MFPs be more specific in their recommendations and get away from motherhood statements. There should be specific goals and objectives identified for all activities managing specific areas on a multiple-use basis. The Winnemucca MFP should be completely updated to coincide with present Manual requirements and standards.

10. A total workload analysis be made of District and State Offices to determine if procedures can be shortened, modified, or eliminated to allow additional field time.

11. The WO make a concerted effort to increase the District staff level to insure proper land use management.

IV. EFFECTS OF THE LIVESTOCK GRAZING PROGRAM ON WILDLIFE HABITAT IN NEVADA

I. Adjudication Problems

A. Suspended Nonuse

(See Section III. AMPs)

B. Wild Horse and Burro Use

Wild horses and burros in the State of Nevada are creating a major problem by perpetuating wildlife habitat destruction. There have been no AUMs* allocated for wild horses within the Districts visited. Each District is issuing licenses and leases for livestock grazing at the level issued prior to the Wild and Free-Roaming Horse and Burro Act. As of this report the State had taken no action to correct overuse by livestock, wild horses, and/or burros where wildlife habitat is being destroyed. There is an estimated population of 7,630 wild horses using Bureau administered lands in the three Districts visited. This equates to an over utilization of 91,560 AUMs; because there have been no reductions in domestic livestock grazing to compensate for the use of this forage.

C. Temporary Nonrenewable Licenses

Livestock operators compose 90 percent of District advisory boards and 50 percent of State advisory boards. These advisory boards direct their attention almost entirely to livestock oriented items at called meetings. In all of the Districts

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*Animal Unit Months is normally expressed as one cow's use of forage resources for one month.

advisory board minutes reviewed, the question of allowing additional AUMs to specific operators was discussed. In the cases where additional AUMs were allowed, District advisory boards were the instigators of additional use. In the Winnemucca District during FY 73, there were 48,728 livestock AUMs allocated in addition to the regular licenses. These additional AUMs have directly attributed to the further destruction of riparian vegetation, meadows, and bank cover around reservoirs.

D. Wildlife Use

Within the State of Nevada there are 97,376 AUMs set aside for wildlife use; however, during the time spent at the field offices Bureau employees could not specifically identify where these AUMs are geographically located. Of the allotments reviewed many were grazed in excess of their annual active use, or were excessively utilized by wild horses and burros. Therefore, it is apparent that wildlife habitat is being destroyed. Field observations verified this finding.

E. Dominant Objectives of Class I Restoration

(See Section III. AMP's)

F. Class of Livestock and/or Season Use

(See Section II. B.)

G. Range Survey

Most of the State's range surveyed carrying capacity was based on AUMs which were usable only for the purpose of livestock

production. Wildlife AUMs were allocated on a simple percentage basis of the total acreage in the geographic area. In effect, there was no consideration given to critical wildlife areas such as winter browse areas; riparian habitat; deer fawning ground; sage grouse booming grounds; mountain meadow areas; escape cover around reservoirs, etc. The AUMs allocated for wildlife included areas identified as unusable by domestic livestock. This topographic restriction for livestock was the only criteria used in limiting areas usable by domestic livestock (see Illustration 1). (In other words, if it was too steep and rocky for a cow or sheep to utilize, it was unusable.) The apparent effect can be seen in a memorandum from the State Director to the Elko District Manager dated February 27, 1974. (Appendix 1, pertaining to the Jackpot AMP.) The meadows are being denuded, the stream-bank vegetation is being destroyed, and reservoir bank cover is non-existent.

In the Pony Springs Resource Area of the Ely District, there is a community allotment of approximately one million acres in size called Wilson Creek Community Allotment. Within this allotment over 50 percent of the vegetative type was pinon-juniper, ranging in density from a closed canopy to 50-50 percent browse-tree type. This entire allotment was grazed with little or no grass species available where the juniper

stands exist. Therefore, the browse species were severely grazed by domestic livestock, wild horses and wildlife. No reproduction of the browse could be found. Existing browse was either dead or in a very severe decadent condition.

II. Custodial Management Areas (Non AMP Areas)

A. Uncontrolled, Unregulated or Unplanned Use

Uncontrolled, unregulated or unplanned livestock use is occurring in approximately 85 percent of the State and damage to wildlife habitat can be expressed only as extreme destruction. Examples can be cited in numerous allotments, of which is the Wilson Creek Allotment, Pony Springs Resource Area, Ely District. This area encompasses approximately 1,000,000 acres with four operators. As previously pointed out over 50 percent of this area is covered by pinon-juniper most of which has a closed canopy. Vegetation other than the tree type is cliffrose, bitterbrush, and mountain mahogany. Annual licenses are issued to the operators to use the area with very little management direction. In this allotment the water table on previous meadow areas has been lowered and rabbitbrush has invaded; the browse has no visible reproduction and is so severely hedged and plant vigor so reduced that decadence is prevalent and the deer population is in a downward trend.

Additional supportive information pertaining to the uncontrolled, unregulated, and unplanned use and abuse being

made can be found in a report prepared by Dr. Floyd Kinsinger, Range Staff, DSC, on the Kane Springs and Tule Grazing Units, Las Vegas, DO (Appendix 2).

Stream riparian habitat where livestock grazing is occurring has been grazed out of existence or is in a severely deteriorated condition. Within the State, 883 miles of streams were identified as having deteriorated and declining riparian habitat. Riparian habitat is a critical habitat component of numerous wildlife and fish species. Large populations of non-game birds and mammals are dependent upon riparian habitat to supply a major component in their life cycle. Streams presently having fish populations are exposed to thermal radiation. This causes increases in water temperature to the point that fish life is extremely limited. Water pollution from excessive soil movement from bank and overland flow erosion is caused by the reduction of stream-bank vegetation. Fishery reproduction potential is being extremely limited by the siltation of spawning areas. An example of this type of adverse impact can be found in the Ely District White Rock AMP draft. Water Canyon is located within the confines of the White Rock AMP and a review of the AMP discloses that there is no mention of any perennial streams. In Water Canyon there is a stream the Nevada State Fish and Game Department has identified in an appraisal

Bureau EAR (Environmental Analysis Record) as a potential transplant site and has planted the endangered Utah cutthroat trout.

Another example of riparian depletion and destruction by livestock grazing is in the Winnemucca District. The Sonoma URA identified the following streams as having severely deteriorated riparian habitat due to livestock grazing: Pole Creek; Rock Creek; Clear Creek (this stream had the most severe abuse); Sonoma Creek; Thomas Creek; Star Creek; Coyote Creek; and Indian Creek.

Another abused highly significant fishery stream is Mohogany Creek in the Winnemucca District. Mohogany Creek is one of the last two streams supporting a population of the endangered Lahonton cutthroat trout. Annually the U.S. Fish and Wildlife Service collects the eggs of this species on the national resource lands to be transferred to their hatchery on the headwaters of Summit Lake. Overgrazing by domestic livestock has deteriorated streambank vegetation to the extent that large amounts of silt and pollutants are being deposited in an alluvial fan in Summit Lake. This alluvial fan, built-up at the entrance to Summit Lake, blocks upstream migration at the point where Mohogany Creek enters Summit Lake. Each year the U.S. Fish and Wildlife Service has to contract for the digging

of a trench in this alluvial fan specifically to allow upstream migration of the endangered fish to its spawning beds on national resource lands. There also is a detrimental effect of stream siltation on spawning gravel.

The gravel is covered over, rendering it useless for reproductive purposes. In many instances the silt covers the eggs after they have been deposited causing them to be cut off from their oxygen and, therefore, death results. There has been no action taken to correct this problem.

Another specific example of fishery resource degradation is Goshute Creek in the Ely District. Beginning in 1969, this stream supported Utah cutthroat trout (Salmo clarki utah) at a level of 291 fish per mile with an average length of 2.66 inches. By 1972, the population had increased to a level of [illegible] fish per mile and 3.79 inches. During this time period, a Habitat Management Plan was developed and some stream structures, trash catchers, and concrete abutments were installed. These stream structures were primarily for the purpose of improving the pool-riffle ratio and providing resting areas for the fish. The HMP called for fencing the stream and eliminating the overgrazed condition along the scream area. This was never accomplished due to the negative attitude of the livestock interest toward the project. The results can best be portrayed by a report Mr. John Trimmer, Hydrologist in the Nevada State Office, made in

April 1973. (See Appendix 3.) Presently, the estimated population of Utah cutthroat trout is less than 250 per mile as found in Trimmer's report. During the severe runoff, as noted in the above report, large sediment amounts were deposited in the lower stream area, this caused the stream to alter its course and spread across unchanneled areas during the high water period. The decision was made to alter the original lower half of the water course where riparian vegetation presently existed, to allow the water to flow into an historical course where no streamside vegetation existed. This new water course does not allow any streamside vegetative protection and without protection from livestock grazing it will not be suitable for a fishery to maintain a viable population. The Utah cutthroat is classified in the State of Nevada as an endangered species. Presently, there is an analysis being made to properly classify this fish species and include it on the Federal endangered species list. Livestock grazing, livestock interests, and District and State Office attitudes have caused the demise of another fishery resource on national resource lands. (Enclosed as Appendix 4 is the fish survey and written comments of Mr. Frank Dodge, Nevada Fish and Game Department.)

B. Conversion of Class of Livestock and/or Season of Use

Several EAMs and actual converted areas were reviewed. Predominately, the areas either being considered for conversion or already converted involved winter low elevation sheep use areas conversion to

spring-summer-fall use by cattle. This type of conversion placed the cattle use in direct conflict with historical antelope use for spring forbs and fall browse. Uncontrolled grazing of these areas has reduced the amount of forage available to wildlife species during critical spring greenup time. It also reduces the forage available in the fall to assist in the nutritional requirements of wildlife necessary to carry them through the winter months. This reduction in available nutrients in the fall period causes malnutrition to occur in the female during her reproduction cycle and therefore a reduction in population. The EARs reviewed did not address themselves to the problems created nor were there any mitigating measures offered.

A typical example can be found in the EAR for the Tippett Pass Allotment, Ely District. The livestock operator requested a change in class of livestock from sheep winter use to cattle spring-summer use. The basis of the recommended action (allow the change) was to afford the operator management flexibility. Impacts were listed as: 1. Decision may not be compatible with MFP or AMP objectives; 2. Cattle will have a tendency to drift onto adjacent allotments; 3. Late spring grazing by cattle every year may be detrimental to the forage resource; 4. The change in class of livestock will require additional waters being developed; and 5. The carrying capacity may differ from sheep to cattle. There was no mention of the effect competition between spring use

by cattle would have on antelope in the area. This flexibility to accommodate livestock interests to the detriment of wildlife habitat is typical of livestock grazing dominance.

C. Lack of Management Following Improvements

In many non-AMP areas there have been seedings of crested wheat-grass established. The seedings have been inadequately watered causing concentration of livestock and overuse in proximity to the watered areas. There is little or no use being made of areas where there is a lack of water. Also the seedings did not reduce the number of AUMs being consumed on the native range, but rather added further pressure on the native range by reducing available acres. The Cattle Camp Allotment and the White Horse Allotment seedings have been established without adequate control or management options being exercised. In both areas the wildlife habitat is being severely grazed. This includes meadows, streambank vegetation and browse species. There have been, and are continuing reductions in wildlife numbers within these areas because of the additional AUM allowance and lack of management.

D. Supplemental Feeding in Lieu of Removal of Grazing

III. AMPs

A. Inadequate Multiple-Use Data to Develop AMPs

In the State of Nevada there are presently some 1,953,238* domestic livestock AUMs being actively utilized each year. An additional 658,938 livestock AUMs are in regular nonuse with 426,536 livestock AUMs in suspended nonuse. All of these figures plus temporary nonrenewable AUMs comprise Class I qualifications. If all of the Class I livestock qualifications were licensed, there would be no wildlife, watershed, recreation or other resource values left to consider.

Within the sage hen AMP pastures of the William A. Stock allotment there was a 2,4-D sprayed area which previously was excellent sage grouse habitat. The area sprayed left no leave strips to provide cover for sage grouse or other wildlife. The area also has some deer use. The allotment has a four-pasture rest-rotation grazing system and the key species managed for is bluebunch wheatgrass. The phenology of this grass species is not compatible with forb or browse production or maintenance. When on-the-ground inspections were made of the allotment, no pasture could be found which had not been grazed. Therefore, the rest-rotation system was inoperative. During the field observations, meadow areas were being damaged severely and encroachment of sagebrush had destroyed over 50 percent of them. This decrease in meadow areas along with the spraying

*figure includes active use, Class II and temporary non-renewal AUMs licensed during FY 72.

of the sagebrush without any consideration for wildlife requirements caused reduction of sage grouse within the allotment. There were watering troughs without any form of bird ladders being used.

B. Establishment of Objectives

There was no effort to tie all resource values in one geographical area to any one set of objectives, management practices or goals.

The majority of activity planning accomplished in the Districts visited was either allotment management plans or habitat management plans. The objectives established within each of these single oriented plans did not take into consideration total resource values.

For example, all of the 23 allotment management plans reviewed specifically stated that one of their objectives was to meet Class I qualifications of the livestock operator.

C. Design of Grazing Plan and Choice of Key Species

Within the allotment management plans reviewed, the predominant species used to evaluate progress and to design the rest-rotation grazing system was grass. In many instances the phenology of the grass species chosen was in direct conflict with any forb or browse production potential. Also, it has been well established by many studies of bitterbrush that a two-year cycle of rest is necessary for reproduction. This is because seeds are formed on previous year's leader growth. In a two-year deferred system, a

three-pasture rest-rotation system and a majority of the four-pasture systems, the only objective which can even be considered is only production for livestock. Overuse of wildlife habitat occurs when uneven carrying capacity pastures are devised as was noted on many of the AMPs reviewed. A prime example of poor pasture design, even though not visited by this team, could be found in the Antelope Mountain Allotment Management Plan in the Carson City District. This plan has a four-pasture system with one of the pastures containing critical winter deer range for the Lassen-Washoe interstate deer herd. During the time the particular pasture is grazed the entire winter habitat for deer is consumed by livestock. This leaves nothing for the wintering deer. This problem was pointed out by "Mr. Rest-Rotation", Gus Hormay, prior to the implementation of the AMP but no consideration was given to this most critical matter. This AMP was developed in 1969. In 1968 the Habitat Management Plan was written and approved for the area. Within the HMP the problems and conflicts between livestock and wildlife on this critical wildlife area were identified. Again there was no consideration given to the information available in the HMP when the AMP was developed.

Another problem arises in the design of grazing systems when excessive fencing is required in areas of antelope migration. There was no evidence in any of the AMPs reviewed that any consideration was given to antelope migration needs.

D. Flexibility Allowed

Problems which existed in at least 50 percent of the AMPs reviewed was the allowance of flexibility on use pastures at the discretion of the operator. Allowing an operator to shift in the established grazing system at his discretion and to graze cattle in excess of his active use was contained in the flexibility statement. Under this type of uncontrolled management there can be no improvement of wildlife habitat but only a further decline in meadows, streambank vegetation, reservoir bank cover and over utilization of declining and decadent browse species which are mainstays for big game.

E. Inadequate Data for Proper Evaluation

(Addressed throughout Section III.)

F. Proper Supervision

Under the present table of organization for resource areas in the Las Vegas, Ely, and Winnemucca Districts (see Illustration 6) and the amount of time spent in the field there is no supervisory technique which would adequately allow for the supervision of AMPs, MFPs or any other plans. When four people are charged with the administration of 4,500,000 acres of BLM land including 11 AMPs and with 50 percent of the entire resource area time spent in the office, no significant supervision can be realized. This is one of the reasons wildlife habitat within the State of Nevada is in a deteriorating condition. Within the State 9,529,000 acres of

big game habitat; 5,717,500 acres of small game habitat; 42,200 acres of waterfowl habitat; 1,875 impoundment acres, and 883 miles of streams are in a declining or unsatisfactory condition. With proper livestock control, reduction, and supervision, these figures could be drastically reduced.

When supervision is afforded, it is superficial. This is documented by the long distances which must be traveled to reach many of the areas, restrictive speed limitations and restricted per diem allowances. Most critical during FY 74 is the reduction in the number of miles which can be traveled with GSA vehicles. Use supervision is grossly inadequate and multiple-use management will never be achieved with these constraints and lack of personnel. These constraints apply not only to AMP's but to all national resource lands.

In the Goldbanks AMP, Winnemucca District, there were no wildlife values considered. This AMPs first objective was to meet Class I qualifications. The range survey of the allotted area shows 2,074 AUMs available for use. The Class I qualification is 2,711. The actual use during FY 73 was 2,192 AUMs. This is a typical example of the over obligation of vegetative resources in Nevada. As documented in the case file of the operator, Woolfolk, on January 28, 1972, cattle were found in the wrong pasture; on August 4, 1972, cattle were again in the wrong pastures; on April 18, 1973, cattle were again found in the

wrong pastures; and on April 26, 1969, cattle from another allotment were found trailing through the pastures. Improper use, with the exception of the last notation, was allowed without trespass of any kind being noted. In the EAR for the Goldbank Allotment Management Plan, the following quote was found, "Elimination of livestock from the range would result in loss of aesthetic values associated with the western life style." But there was no mention of the loss of wildlife which was there long before the livestock became a life style.

G. Construction of Improvements to Meet Objectives

The location of management facilities to accomplish AMP objectives was not adequate. The design of pastures and subsequent placement of fences results, in many instances, in unequal pasture carrying capacity and necessitate trailing of livestock through pastures scheduled for no grazing. There are inadequate funds to supply enough water facilities within pastures to realize the full potential of this total area.

Another problem was reservoirs constructed but no fenced, resulting in bank cover being destroyed even though the objectives of the AMPs were to improve wildlife habitat. These listed deficiencies can be pointed to as causes of the deterioration of meadows, streambank vegetation, escape cover and reduction of browse species for wildlife.

IV. Miscellaneous

A. Invading Species

Overgrazing by livestock has caused invasion of sagebrush and rabbitbrush on meadows. This has decreased the amount of meadow habitat available for wildlife survival by at least 50 percent. Lowering the water table through erosion increases susceptibility of meadow areas to encroachment by invader species and decline of water sources necessary to produce succulent vegetation. There has been little or no effort made to correct or reverse this trend of meadow deterioration. The reduced meadow area has caused a decline in non-game as well as game populations.

Juniper invasion, if allowed to continue, will eliminate much of the scarce wildlife habitat. Juniper acreage is still included as a part of the usable acreage for livestock grazing. Much of the juniper stands, in forests in Nevada, is considered closed stands where little if any other vegetative species exist. Other existing vegetative species are being decimated by livestock use.

B. Construction of Improvements

The majority of existing improvements constructed in the State of Nevada was directed primarily for the purpose of livestock production with little or no consideration for other resource needs or values. Fences are over-constructed (standard type D fences) for the actual needs of livestock control. This type of fence is one of the contributing factors in the high cost of

fencing. There was little, if any, regard given to bighorn sheep movement when allotment boundaries were fenced. An example is the Highland Range Area where an AMP was developed on ephemeral range. This area could have quite effectively used water as a controlling agent but a fence with post spacings of 16 feet and four wires was constructed. This type of construction also can be found in antelope use areas which causes migration problems.

The construction of reservoirs has been directed toward rancher support and no consideration has been given to wildlife habitat needs. There are no irregular edges, no fencing to provide for bank cover for waterfowl or any other species, and no islands established. Therefore, it is concluded that at present most reservoirs in Nevada do not benefit wildlife habitat or support a [illegible]-use theory. Spring developments, pipelines, and water troughs are developed only when livestock production needs arise. Spring production flow is reduced with a head box and piped (without occasional water outlets for wildlife) to troughs which have no bird or small mammal ladders or floating devices. The reduction of water at its source reduces succulent vegetation and the amount of free water available to wildlife. Those identified single purpose structures ignore wildlife habitat needs. In many instances the habitat is altered to the extent that previous wildlife species in the area can no longer exist. The livestock allotment boundaries on all allotments are located specifically

to benefit a private rancher's needs and do not consider any other resource value. Control of livestock through 17,984 miles of existing and proposed fences for the benefit of a private ranching operation promotes the attitude that livestock production is BLM's prime concern. This is further documented when AMP's are developed with no coordination to eliminate pastures adjoining each other from being the heavy use pasture during any one grazing season on two adjoining AMP's. This could and does, in many cases, involve the total use of many critical wintering wildlife ranges leaving little or no forage for wildlife.

C. District and Area Staffing

District and area staffing can be looked upon as tokens rather than a real effort to manage the public lands on a multiple-use basis. There is only one wildlife biologist assigned the duties of wildlife habitat management per District. An example of the tremendous workload placed on these few individuals is the wildlife habitat responsibilities for 365 different species of mammals; birds; fish; amphibians and reptiles identified in the Ely District, including 10 listed as endangered species. It is impossible for a single individual to adequately provide protectional measures against wildlife habitat destruction in an area used almost entirely by uncontrolled and unregulated livestock. In many instances the District wildlife biologist also has the responsibility of the entire District recreation program. The

average District in Nevada has approximately 9 million acres and with one individual having two very important resources to consider, such as wildlife habitat and recreation, equates to very little consideration being given to the wildlife and recreation program in the District.

D. Areas of Livestock Removal

Since there are 883 miles of streams with deteriorating and declining habitat it is apparent that grazing systems do not protect and enhance the wildlife values. It will take a minimum of five years of total protection for the riparian vegetation in Nevada to recover and start providing needed wildlife habitat. Problems associated with declining riparian habitat have been well identified in field reviews, special studies, and unit resource analysis. Yet the Bureau continues to neglect the needed management of these most critical desert habitats and ecosystems. Failure to recognize and deal realistically with problems such as these has caused justified criticism against the Bureau, such as the NRDC suit. There are specific geographic areas within the fragile desert environment that do not lend themselves to grazing by domestic livestock on a continuous basis if they are to survive and provide needed components for the ecological balance. Riparian vegetation, meadowed areas, and reservoirs fall within this category. Adequate protection and enhancement of these critical components of the desert must be an integral part of decisions that guide future management needs of the national resource lands.

E. Scattered Patterns of AMPs

Review of the majority of AMPs in the office and on-the-ground indicates only those receiving cooperation of the operator were developed or implemented. The most difficult ones or those having the most conflicts failed to be addressed or considered for development. Therefore, this type of AMP development has caused a wide scattering of livestock management plans within the Districts, causing hardships on the area personnel in providing adequate supervision, and creates problems in attempting to correct the more critical issues of livestock grazing. The scattered pattern of AMP's creates major problems for wildlife habitat management.

F. Personnel Tenure and Experience

In the Districts visited the tenure and experience of area personnel averaged approximately two years. This creates a very unstable and untenable situation. It is felt that proper resource management of all resources cannot be adequately addressed or recognized within this short period of time.

G. Allotment Allocation

Many allotments as established now create problems when total resource management is attempted. Allotment boundary lines often cut across critical wildlife habitat and often are too small to devise any grazing system. The wide variations in vegetative types, lack of consideration for other resource values when the allotments were established, coupled with limited funding make it impossible to establish any intensive management of livestock and not be harmful to other resources.

H. Funding Imbalance

Historically, funding of resource activities has caused some activities to dominate others. A good example is where watershed and range improvement funds are allocated to implement AMPs. Within the AMP area if there are wildlife or recreation values which need protection or improvements, then those activities are requested to finance that aspect even though they are not creating the problem. A specific example of this type of imbalance can be found in the Elko District Comb Springs AMP. A crested wheatgrass seeding will be placed around some low production springs where livestock grazing will have adverse impacts on the springs. Sage grouse, antelope, and non-game habitats exist within the area of the seedings. The springs supply critical habitat requirements for this wildlife. The seedings and fences for implementation of the AMP will be funded by the (1220) range and (8100) range improvement activity, but the protection of the springs has been determined to be a 1285 or wildlife activity responsibility. Wildlife does not have project money available to provide the needed fencing for these critical springs. The fact that wildlife does not have the project funds available has not altered the AMP being implemented, as scheduled, even though there is a very good possibility the springs will be adversely affected.

Within the Ely District for the FY 75 program there were no funds requested for wildlife projects. Although there were some

$91,000 requested for projects in the range program and $65,000 requested for the watershed program. Listed projects for the above two programs were fences; cattleguards; pipelines; chainings, and seedings. All of these projects were requested for the purpose of livestock management. Within the Winnemucca District there was a total of $3,499 requested for maintenance of wildlife funded projects, tree planting, Leonard Lake development, and one fence on the north fork of the Little Humboldt; again the range program project request amounted to $73,500 and the watershed program request was $107,006. All of the projects for both the range and watershed programs were for the purpose of increasing livestock usability of vegetative resources. Listed projects for these two programs were pipelines; fences; cattleguards; water barring; spring development, and charcos. It is apparent that imbalanced funding requests of $336,506 being spent in the two districts toward livestock oriented projects and only $3,499 for wildlife projects will cause continued adverse impacts on wildlife and wildlife habitat. The majority of these projects were approved by the Nevada State Director. These projects for range and watershed are not funded at a level to include protection of streambank vegetation, reservoir bank cover, or meadow restorations through fencing. Seedings for livestock production are normally monocultures of crested wheatgrass and do not include browse and forb species necessary for good

wildlife habitat diversity. This example of imba'anced funding between activities ccuses many problems and conflicts between wildlife and livestock grazing.

I. Field Personnel Attitudes

(Covered throughout Wildlife Section.)

V. EFFECTS OF THE LIVESTOCK GRAZING PROGRAM ON WATERSHED IN NEVADA

1. Adjudication Problems

A. Suspended Nonuse

At the present time the 426,536 suspended nonuse AUMs carried within the State (see Illustration 1) are not affecting the watershed program. However, were this use reactivated (based only on availability of feed), the watershed aspect of much of the rangelands would be affected. As long as this use, plus the 658,938 licensed nonuse AUMs is carried on the books, there remains a possibility of a 58 percent increase in demand for the land.

B. Wild Horse and Burro Use

Wild horse and burro use within some Districts is adding to the problem of carrying capacity demand of many areas. From the statistics furnished us, only one District has reserved forage for these animals. This use may easily account for the regular licensed nonuse in at least some areas; however, the threat of activating regular nonuse is a real possibility.

C. Temporary Non-renewable Licenses

The issuance of temporary non-renewable licenses must be looked at very closely. If insufficient litter remains for soil surface protection after the additional use, the watershed aspect of the rangeland would be adversely affected by an increase in overland flow, sediment production, and the lowering of soil fertility and infiltration rates.

D. Wildlife Use (N.A.)

E. Dominant Objective of Class I Restoration

Most AMPs reviewed seem to have as one of their objectives the restoration of use to original Class I qualifications. This in itself does not affect the watershed resource providing sufficient litter remains after the grazing period is over. However, most AMPs reviewed seem to contradict this, stemming from a philosophy from some unknown source, as evidenced from the following quotes from some of the AMPs.

1. Pasture closing dates -- "Livestock can remain in open pastures after seedripe date as long as there is feed left."
2. "These pastures will be utilized to the fullest extent possible. The limiting factor will be the condition of the livestock as determined by the range user."
3. "Under this plan, grazing use during treatment A & B (three treatment plan) should be as heavy as possible."
4. "Under this plan, grazing during treatment A, B, D and E (five treatment plan) should be as heavy as possible."

As a result of this philosophy little, if any, litter is left for soil protection and enrichment. In all Districts visited we were assured that this philosophy was not in the new AMPs. Three newly written plans reviewed did not contain these kinds of statements.

Illustration 1 indicates that the Ely District has no acres classed as unusable by livestock. Yet, within one AMP 62,958 acres are shown as unusable by livestock (1967 range survey). This compares to only 6,667 areas classified as unusable by livestock as shown on a

1961 range survey for the same area. This is a step in the right direction but leads one to wonder if areas such as closed pinon-juniper stands should not be classified as unsuitable for livestock grazing since many of these areas have virtually no grass understory remaining.

F. Class of livestock and season of use (N.A.)

G. Range Survey (N.A.)

II. Custodial Management Areas (Non AMP Areas)

A. Uncontrolled, Unregulated, or Unplanned Use

The uncontrolled or unregulated use of rangelands results in animals remaining in certain areas until the scarcity of food forces them to move. This results in severely overused areas adjacent to waterings, etc., while other portions of the area may receive little use. As a result, these historic use areas (around permanent waters such as streambanks, reservoirs and springs) are in a critical to severe erosion classification while steeper slopes are classified as slight to moderate (Paradise URA, Rock Creek AMP). This often results in the removal of riparian vegetation and other streambank cover. When high water comes banks cave in, resulting in a high suspended-sediment load and water quality degradation.

Within these areas, livestock are not rotated, resulting in the same spots being abused each grazing season. As can be seen on Illustration 3 the predicated erosion classification (FOSSF) generally shifts from less stable classed acres to more acres within the severe class. Illustration 4 shows this shift in a different manner and

indicates we will lose 926,419 equivalent stable acres if there is no change in management while we would gain 932,602 equivalent stable acres over a 15 year period if a positive management change were initiated. This is based on a 19,713,479 acre sample of updated Phase I, WC6D rating system within Nevada.

There appears to be a case in point in the Duckwater area. Data furnished indicates a carrying capacity of 33,652 AUMs within the allotment, yet only 15,695 AUMs were licensed in 1972. This is less than half of the capacity shown by the range survey. At the same time the only cattle observed in the area were immediately north of the reservation in an area which has virtually nothing but halogeton growing on badly abused flats. Even though only 50 percent use is being made it is in the area which is in the most critical watershed state.

B. Conversion of Class of Livestock and/or Season of Use

The conversion of class of livestock and/or season of use has had some adverse impacts on the watershed protection qualities of some areas. Areas, which were winter sheep use areas that depended on snow for moisture, have been changed to cattle use areas with the addition of permanent water facilities. Sheep use of vegetation resulted in the majority of grazing pressure being placed on shrubs while cow use results in the majority of the grazing pressure being put on grass plants. With the addition of permanent waters the grazing period in many cases has been extended. Although the grazing

period may look the same on paper, and [illegible] to leave the area when there was no snow, now they can [illegible] until the grazing season is over.

> "In general for these units, use is made until late spring, which is detrimental to good plant growth and range readiness. This is often the result of the private lands of the operator being unable to take the livestock when it should be removed from the Federal range." (Cherry Creek URA)

> "Both Steptoe and Newark units border the forest with coordination of moving directly from BLM into the forest. This will often cause the operator to stay on BLM lands as long as possible and cause overuse in the spring."

c. Lack of Management Following Improvements

Within Nevada there have been many acres of rangeland converted to crested wheatgrass seedings. Districts visited have made an effort to initiate at least a grazing treatment based on plant requirements within a majority of these seedings. However, many of them are on a voluntary basis for opening dates only and do not have definite numbers of animal set (Wilson Creek URA).

> "These seedings were originally established to provide spring and fall use for livestock as they travelled back and forth between the mountains and dry lake valley. However, over the years the use on these seedings has changed to where they are now used from 5/1 through 10/31 each year." (Wilson Creek URA)

Within the majority of the used crested wheatgrass fields there is little or no litter remaining at the end of the fall grazing season. This results in very little soil protection for spring snow melt periods as well as other problems such as grass tetany.

> "In certain years grass tetany is a problem when cattle are first put into crested wheatgrass seedings. Experience has shown that losses can be greatly reduced if some dry grass is left standing for spring when cattle come into the green seedings." (Wilson Creek URA)

Watershed protection is derived from two major sources, that of plant density and that of plant litter, while soil fertility stems from decadent plants materials. Within many of the seedings visited the plant density is good. sometimes better than ungrazed seedings, but virtually no litter is left within the grazed fields. This results in only cover and soil enhancement in one of three years within a three pasture system.

The Copper Flats Seedings can best serve to illustrate the point made previously. Seeding was completed in 1952 and increased production from 70 to 260 AUMs. By 1962 sagebrush invasion was so bad that the area had to be retreated with 2,4-D. In 1971 2,000 additional acres were chained and 2,700 acres were plowed which resulted in 866 added AUMs from the plowing and 1,191 AUMs from the chaining.

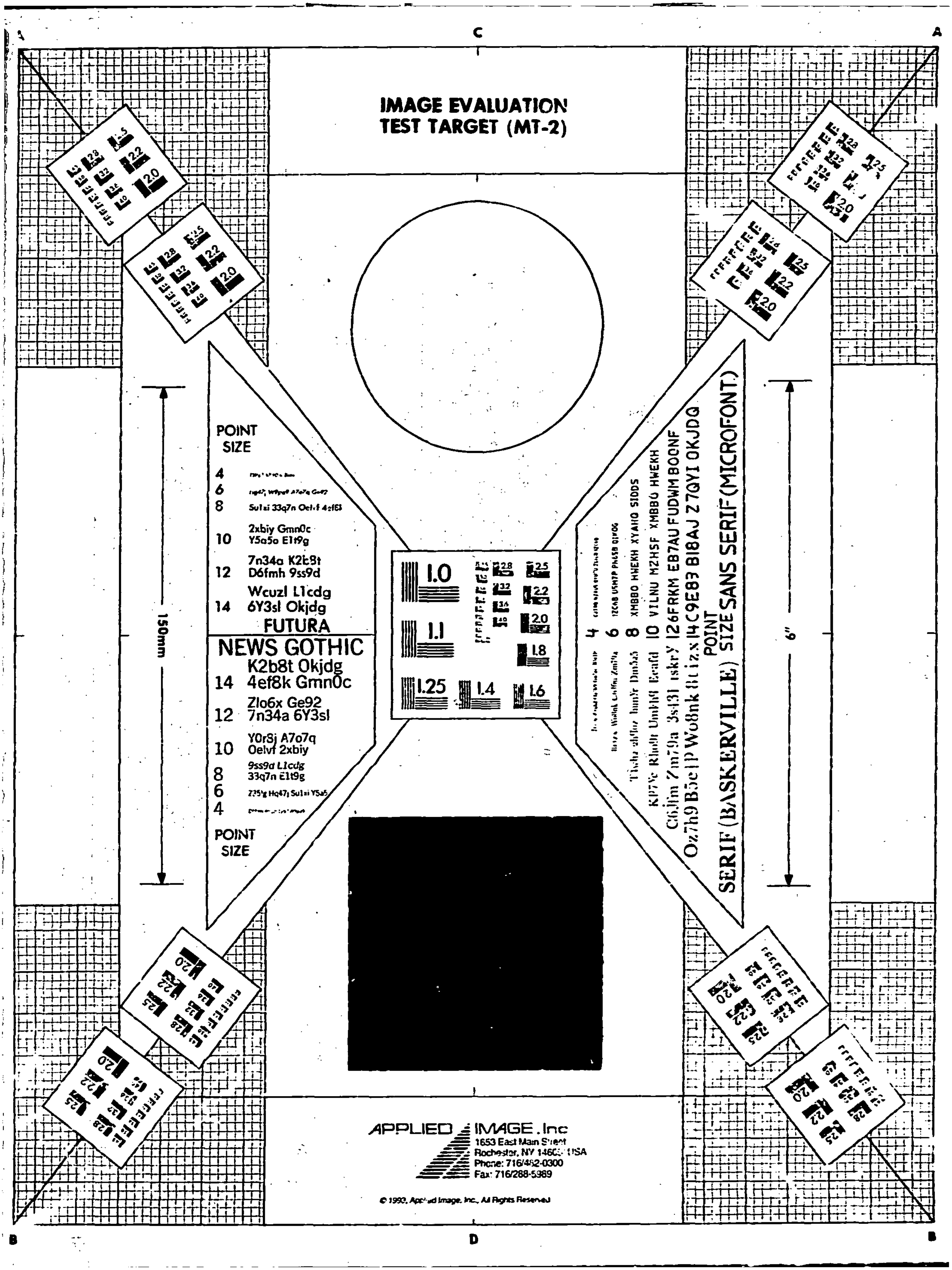
With additional grazing pressure on grass plants a reinvasion of brush species is bound to happen without proper management or grazing based on plant phenology.

D. Supplemental Feeding in Lieu of Removal of Grazing

Within one AMP reviewed in the office the following statement is made regarding the creosote type.

> "Although this vegetative type consists mostly of unpalatable species, desert cattle use the area in emergency conditions. At such times supplemental feeding must accompany this use, which is primarily in the winter."

Most creosote areas viewed on the ground have an excellent "erosion pavement" ground cover which, when uninterrupted, provides excellent soil protection from overland flow resulting in very little sediment production. The swale bottoms have a fairly good grass cover which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CONTINUING

provides the majority of the grazing capacity within these types. Supplemental feeding to force cattle to consume this vegetation may not be bad in winter and if enough regrowth occurs the following spring to regain the watershed protection necessary for the drainage bottoms; however, a problem can easily arise if insufficient ground protection is present during an overland flow event. Soils within these bottoms are easily eroded without sufficient protection from vegetation and litter because the erosion pavement is missing in the bottoms. The full impact of this use cannot be ascertained until the amount of wind erosion during the spring windy season is evaluated. It may be that the impact of bare ground in the spring windy season is greater than the impact of overland flow.

III. AMPs

A. Inadequate Multiple-Use Data to Develop AMPs

The present activity planning system of the Bureau if based mostly on the needs of a single activity. This results in the objectives being oriented toward that activity's goals and in many instances leads to conflicting objectives. This in all likelihood results from inadequate data and understanding of the needs of other resources within the area. In some of the latest AMPs reviewed, watershed data has been used to establish the present situation and solid objectives.

B. Establishment of Objectives

Following are examples considered to be conflicting objectives within AMPs reviewed.

Geyser Ranch:

> Obj. 1: Increase usable cattle and wildlife forage production to the maximum through livestock manipulation and management.
>
> Obj. 2: Reduce erosion and increase wildlife and livestock production by converting unproductive sites to a desirable mixture of grasses, shrubs, forbs and browse.
>
> Obj. 3: Develop a grazing system that will allow the rancher to adjust livestock on the allotment according to weather, forage and water conditions.
>
> Obj. 4: Minimize livestock movement.
>
> Obj. 5: Increase soil stability by increasing vegetative cover and litter from 11.5 percent to 25 percent

These may well be legitimate objectives to have within an AMP; however, a little later in the AMP is the following:

> Pastures closing dates: "Livestock can remain in open pastures after the seedripe date as long as there is feed left."

It is impossible to see how the increased litter objective can be reached if the total responsibility of when to move the cattle remain with the permittee.

Sand Springs AMP:

> "These pastures will be utilized to the fullest extent possible. The limiting factor will be the condition of the livestock as determined by the range user."
>
> "Under this plan grazing use during treatment A & B (3 treatment plan) should be as heavy as possible."

Mustang AMP:

> Objective: "Improvement of the water and vegetative resource through improved plant composition density and vigor, increased soil fertility and minimize erosion."

Following the description of the grazing schedule is this statement which is incompatible with the above objective.

> "Under this plan, grazing during treatment ABDE (5 treatment total) should be as heavy as possible."

C. Design of Grazing Plan and Choise of Key Species

Management methods listed in III B do not provide for adequate soil protection. Heavy use, or full use treatment, is necessary to change the vegetative composition. However, the three treatment system based on (A) turn in a greenup of key species; (b) graze after seedripe of key species; and (C) full year rest, will result in very little damage to unpalatable plants such as sagebrush, pinon or juniper, greasewood, etc. Therefore, these plants will be in the community indefinately. No purpose is served by the full use treatment of these types. To provide adequate watershed protection the amount of litter remaining should be approximated by zero percent treatment A, 30-40 percent remaining after treatment B and 90+ percent remaining following treatment C.

The design of the grazing system and carrying capacity of the range should be such that during average and above average years of vegetative growth a sufficient amount of litter is left for soil protection and enhancement. This insures maximum microbial activity within the soils and helps minimize soil compection resulting from grazing animals.

D. Flexibility Allowed

The amount of flexibility allowed within the AMPs results in uncertain if not inadequate watershed protection within some of the

AMPs. Following are some examples of flexibility allowed which appear to have adverse effects on the amount of litter left on the land.

Murray Creek Allotment:

> "Flexibility will be allowed the operator in the White Cloud Wash Area, to move his livestock between pastures when weather conditions make holding livestock impractical. This flexibility will be at the discretion of the operator and he will determine when weather conditions warrant livestock movement."

This gives the operator total authority to do as he pleases, based on livestock needs, not plant or rangeland needs.

Within a grazing plan for a group of seedings in one District the following portion of a letter sent out to the seven operators involved states:

> "Because of the extremely good forage conditions that we have this year, I have decided to let you put additional cattle in the White Rock and Meadow Valley Wash seedings. Effective August 1 you may put the following numbers of cattle in these two seedings until October." (Total of 485 cattle where the normal for the seven operators is 219 cattle.)

If these cattle were taken from areas of critical watershed conditions to allow for protective covering to occur there, additional usage may be justified. However, if these were additional animals coming from some other source, the extra litter would be better utilized by the soil.

E. Inadequate Data for Proper Evaluation

In viewing the trend studies there was no way to adequately determine what was happening to the watershed conditions within the entire allotment. It appeared there were insufficient studies to qu ntify

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> "Under this plan, grazing during treatment ASDC (5 treatment total) should be as heavy as possible."

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The design of the grazing system and carrying capacity of the range should be such that during average and above average years of vegetative growth a sufficient amount of litter is left for soil protection and enhancement. This insures maximum microbial activity within the soils and helps minimize soil compaction resulting from grazing animals.

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E. Inadequate Data for Proper Evaluation

In viewing the trend studies there was no way to adequately determine what was happening to the watershed conditions within the entire allotment. It appeared there were insufficient studies to quantify

the changes within the AMP. Each vegetative subtype was not represented by the study sites shown and in many cases there were incomplete sets of photos. In some areas there were no pregrazing system photos to use as a base to measure changes.

Although this report deals primarily with adverse grazing impacts on watershed protection quality of an area, it is to emphasize that planned sequential grazing systems are the first prerequisite to watershed management of the Bureau's semi-arid type ranges. Illustrations 4 and 7 indicate that the individuals who did the soil erosion condition predictions are in full agreement with this statement. Illustration 4 indicates a highly significant shift in erosion condition class acreage into the stable, slight and moderate classes from the severe and critical classes with proper grazing management. Illustration 7 indicates that grazing management would prevent the loss of 925,419 stable acres as well as gaining 932,602 additional stable acres over the present acreage. This is based on only a 41 percent sample of the BLM lands.

F. Proper Supervision

The figures found in Illustration 7 are based on AMPs receiving sufficient supervision to insure the workability of the system and meeting good solid objectives for watershed protection as well as range objectives.

G. Construction of Improvement to Meet Objective (N.A.)

Analysis of Illustrations 4 and 7 indicate that on many areas, grazing management alone is going to take more than 15 years to meet

watershed needs, or that additional treatments will be needed to provide adequate watershed protection. Illustration 4 shows this by the predicted erosion condition class acreage listed as FPSSF. Illustration 7 indicates that for the 41 percent sample, 1,626,229 stable acres would result with proper management and treatments.

IV. Miscellaneous

Illustration 3 indicates the acreage within each vegetative subtype as of August 1973. The majority of critical and severe acreages occur within those types where brush encroachment is present e.g., sagebrush types (04-), pinon-juniper types (091), creosote (111), saltbrush type (131) and greasewood type (141).

A. Invading Species

Within the Ely Springs Allotment, comparing 1954 AMS aerial photos with recent photos indicates the pinon-juniper type has moved three miles in the 20-year time frame (Caliente URA). With this rate of spread, at least in the more susceptible areas, we will be hardpressed to keep from losing additional watershed protective cover, forage for wild and domestic animals.

The successional changes which occur are as follows:

> "Grass cover is weakened through some cause, natural or man-made, and sagebrush invades into the former grassland as a frontal or spot invasion. The sagebrush then adds more competition to the already weakened grasslands resulting in additional losses of grass density. As sagebrush becomes dominant barren niches are left within the stand, juniper takes advantage of these and becomes established. As the juniper enlarges, it overtops and shades out sagebrush growing in close proximity and pinon pine becomes established here. The final step is for the pinon to crowd out through moisture competition, and other factors, and becomes a closed canopy of pinon with very little ground cover understory remaining and only an occasional juniper. (Caliente URA)

The successional vegetative changes which occur indicate the weakest link in the succession is the first frontal invasion of juniper.

This process is going on today particularly where the pinon-juniper has become a closed canopy on the shallow ridge tops and sagebrush occupies the swales between the pinon-juniper stands. If the swales were treated today to restore a good competitive grassland the change of the area to closed pinon stands may not occur.

B. Construction of Improvements

Almost all fence observed on our entire trip are typical "type D" fence, four strand barbed wire with post spacings of 16.5 feet. One district stated they had used suspension fences around their crested wheatgrass seedings but they didn't work. It appears that interior pasture fences on many cattle ranges could be constructed as "type B, special fences" and do an adequate job required for grazing management. The "type B, special fence" is a three strand barbed wire with a post spacing of 22 feet. Further study by a more qualified engineer should be done on this item. Estimating a 10 percent saving in labor for construction, four spools of wire and 80 steel posts per mile, the savings would amount to $207 per mile based on October 1973 GSA prices.

C. District and Area Staffing

Districts visited are grossly understaffed to do an adequate planning job by today's standards and requirements. They are for the most part lacking in qualified personnel to interpret soil data, if it were available, and in several instances lack hydrologic studies before a plan is put into action.

[redacted]

[redacted]

D. Areas of Livestock Removal

There are areas where public opinion may demand the removal of livestock grazing. One such area is the Murray Canyon watershed project. At the present time the only operator does not utilize the area and hasn't for several years. From talking to District personnel it appears the area could be closed to grazing except to accomplish a certain treatment, such as restoring vigor. However, what would happen if the present operator sold that grazing right or died today?

Another such area is the badly abused flat in the Duckwater area. Even if an AMP were started the halogeton flat would be extremely slow in responding. The area could be fenced to exclude livestock use until something in the way of perennial vegetation becomes started, then that pasture could be added into the grazing system.

Streambanks which are capable of supporting willows, etc., are another example. At the present time the temperature of those streams is higher than if they were shaded, therefore thermal pollution is occurring. It is questionable if riparian vegetation such as willows etc. could be started and survive along many of the streams unless livestock are fenced away from the shaded areas. This would in all likelihood be less than a 200 foot wide area and would require some watering facilities or openings left across the stream for access. The Crowley Creek Allotment is good evidence that we can get streambank protection from grazing systems in the form of perennial grasses and sedges. However, there are no shaded areas to draw livestock onto the streambank.

[redacted]

[redacted]

E. Scatter Patterns of AMPs (N.A.)

F. Personnel Tenure and Experience (N.A.)

G. Allotment Allocation (N.A.)

H. Funding Imbalance (N.A.)

I. Field Personnel Attitude (N.A.)

VI. EFFECTS OF THE LIVESTOCK GRAZING PROGRAM ON RECREATION RESOURCES IN NEVADA

I. Adjudication Problems

A. Suspended Nonuse (N.A.)

B. Wild Horse and Burro Use

The Wild and Free-Roaming Horse and Burro Act gave legal status to wild and free-roaming horses and burros on national resource lands. Through this legislation the Bureau was given the mandate to preserve and manage these animals for public interest values. It is a function of the recreation program to preserve and protect public interest values. In this sense, any action which has an impact on the preservation and protection of wild horses has an impact on the recreation program.

In most areas where there are substantial concentrations of wild horses there are poor and declining range conditions resulting from the severe competition between cattle, sheep, other wildlife, etc... Poor range condition contributes to poor physical condition of animals which often results in loss of life due to disease, adverse climatic conditions, etc., and a poor colt crop.

C. Temporary Non-renewable Licenses (N.A.)

D. Wildlife Use (N.A.)

E. Dominant Objective of Class I Restoration (N.A.)

F. Class of Livestock and Season of Use (N.A.)

G. Range Survey (N.A.)

[redacted]

II. Custodial Management Areas

A. Uncontrolled, Unregulated, or Unplanned Use

Overgrazing and uncontrolled use has impacted the recreation program as follows:

1. Scenic Values. Overgrazing around water sources, along valley or stream corridors has seriously denuded the vegetation creating ugly erosion scars, exposing the bare soil and destroying the riparian vegetation which gives color, contrast, texture, and vertical dimension to the landscape. This is a universal problem observed in every area visited by the team. The seriousness is compounded by the fact that water is the single greatest magnet for attracting recreationists. Therefore, visual pollution tends to occur where the greatest visitor-use potential exists.

2. Cultural Resources. Prehistoric and historic people who occupied the desert areas of Nevada tended to settle around or near water sources. The heavy trampling and accelerated erosion associated with uncontrolled livestock use around these water sources is unquestionably having a serious impact on the cultural resource values, particularly archeological values. The extent of this damage is difficult to measure since probably less than 1% of the State has been intensively inventoried for archeological values.

Head cutting and deep gully erosion resulting from overgrazed watersheds has likewise had a substantial destructive effect on streamside archeological sites.

[redacted]

3. Primitive and Natural Area Values. Change of plant composition, denuding of vegetation, destruction of meadowland, and accelerated erosion has had a substantial effect on natural and primitive area values throughout the State (see section IV.B.1, for additional details).

B. Conversion of Class of Livestock and/or Season of Use (N.A.)

C. Lack of Management Following Improvements (N.A.)

D. Supplemental Feeding in Lieu of Removal of Grazing (N.A.)

III. AMPs (N.A.)

IV. Miscellaneous

A. Invading Species

The change in plant composition (attributed to overgrazing of desirable grass species) from a variety of species to monocultures of sagebrush or pinon-juniper creates vast expanses of monotony where there is little variety in color, texture, form, etc., which are the important ingredients of a visually pleasing landscape.

B. Construction of Improvements

The construction of range and associated improvements has resulted in the following impacts on the recreation resources:

1. Cultural Values. Probably the most severe impact to the recreation program has been the destruction of archeological and historical values resulting from range improvement work. The exact magnitude of the impact is difficult to assess but there are indicators which would lead one to believe that the impacts may have been substantial. Some of the indicators of impacts are as follows:

a. The JDR reports 1,236 spring developments. Prior to 1970 little or no effort was made to survey spring sites for archeological values before development. It is the general concensus among archeologists that there are archeological values at all spring locations. The magnitude of the damage incurred at each site will vary with the amount of excavation completed during development. Where collector systems were installed the damage is likely great.

b. Re-vegetation projects tend to occur in areas where there are favorable climatic and soil conditions. Historically these have been productive areas for herbs, edible plants, nuts, game animals, etc. Therefore there is a high probability of prehistoric habitation. The Bureau has plowed or chained 3,975,650 acres of such land in Nevada. These practices are most destructive to archeological or historical values sine the plowing, uprooting of trees, and the furrowing effect of the "Ely Chain" substantially alters the stratigraphy of the land which in turn destroys the evidence needed by archeologists to extract scientific data from a site.

c. There are hundreds of internal basins in Nevada which prehistorically were dotted with many lakes. Many of these ancient lakeshores were inhabited by early man. Information about these early inhabitants is extremely limited, therefore any sites associated with them are important. Today these

[redacted]

shorelines are crisscrossed by fences, pipelines, road, etc., that were constructed to control and manage livestock. Again, prior to 1970 little or no effort was put forth to identify archeological values prior to construction.

Historically, the best protection afforded cultural values has been the lack of access. Aerial reconnaissance trips taken in the three Districts revealed a honeycomb of roads, most of which were built by range or mining interests and maintained principally for range access. This has afforded access to vandals, pot robbers, etc., who have desecrated the more obvious historic and archeological sites.

2. Scenic Value. The pinyon-juniper chainings have had a catastrophic effect on the surrounding visual environment. These projects probably affect less than two or three percent of the visual environment in the State but unfortunately they occur in some of the more scenic areas. The practice ofleaving the uprooted trees in place and having straight lines or unnatural boundaries creates a visual eyesore which will take decades to restore.

Most of the plowed and reseeded sagebrush areas have enhanced the aesthetic values by providing a harmonious contrast in color and texture. This is not so in seedings which are overgrazed (i.e., when no mature yellow stocks remain). Straight lines along the boundaries of these projects are visually distracting and should not be allowed on future projects.

Other project work such as road, fence, well, pipeline, and spring developments has had a lesser but widespread effect on the visual environment. Especially the long straight lines visible in the landscape created by fences, pipelines, and roads. The practice of "dropping the blade" to clear the route for fences and pipelines has been a major contributor to visual pollution.

3. Natural and Primitive Values. Range improvement work has had a devastating and widespread effect on the natural and primitive area values. Were it not for range improvements and the maintenance of old mining roads, etc., for range program purposes approximately 90 percent of BLM lands in Nevada would probably be in a near natural condition. Illustration 3 shows the impact of the range or range associated improvements within the State. For example, almost 800,000 acres have been re-vegetated (mostly to a monoculture--crested wheatgrass).

4. Access. The development and maintenance of roads and trails for range purposes have provided the means for many thousands of people to use the many resources on the national resource lands for recreational purposes. This is probably one of the major positive impacts that has resulted from the range program. Unlike in many other States, fences, blocked access, etc., does not seem to be a problem in Nevada.

5. Collecting Values. There has been some loss of pine nut collecting opportunities due to pinon-juniper chaining. This loss is fairly insignificant compared to the total available.

[redacted]

There are more than 4.5 million acres (see Illustration 5, item 019) of pinon-juniper in Nevada. Only 47,000[1/] or a little more than one percent has been removed by chaining or other practices.

As far as the team could ascertain the impact of range improvements on rock, mineral, and other collectable species has probably been more beneficial than detrimental.

6. Water for Human Consumption. None of the spring or well developments visited by the team was designed to provide water for human use. The reason given for not doing this was the liability incurred by the government (i.e., if the Bureau provides water for human consumption it has the responsibility to insure that the water quality meets minimum public health standards for such use). The Districts claim they just do not have the man-power available to test the water monthly as required by Instruction Memo 73-454.

The fact remains that many water sources which were once available for human use are no longer readily available, because of the above circumstances.

C. District and Area Staffing

Of the three Districts visited only the Las Vegas District has had a full-time recreation planner for any length of time. Winnemucca District has a new recreation planner who has not been in the District long enough to have any substantial impact of District programs. The lack of recreation expertise shows up vividly in AMP objectives and

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1/ May 16, Special JDR file printout.

design. Little or no consideration is given to such things as preserving and protecting aesthetic, natural, primitive, or cultural values.

Recreation values are not depicted adequately in existing URA's although recent additions show great improvement. Consequently MFP's will not have the quality input from recreation and therefore the constraints generated by the MFP will not be adequate to insure that recreation values will be given proper consideration in AMP's, etc.

At least one competent recreation planner is needed in each District to insure adequate inputs into various management, plans, programs, etc.

D. Areas of Livestock Removal (N.A.)

E. Scattered Pattern of AMP's (N.A.)

F. Personnel Tenure and Experience

It became apparent as the team visited the various Districts that the rapid turnover of personnel at the area level is having a devastating effect on the whole resource management program. The rotation of area managers and area staff personnel is frequently occurring on cycles of one to two years. This means that by the time the personnel are becoming acquainted with their area they are moved.

In spite of what we would like to believe--resource management is still more of an art than a science. There is not now and probably never will be a scientific method developed which tells the manager just how he should handle a particular tract of land. Every area has different--

plant composition and characteristics

climatic conditions

socio-economic conditions

user pressures

problems

It takes time to assimilate this information and plot a course for a resource management program. The availability of reliable URA-MFP data will help but in the past and probably for some time to come the individual who is transferred out of an area takes much more information with him than he leaves behind for the next guy. This is probably one of the major contributors to the disjointed resource management programs occurring at the area level in the Bureau.

G. Allotment Allocations (N.A.)

H. Funding Imbalance (N.A.)

I. Field Personnel Attitudes (N.A.)

A concerted effort was made to measure the attitudes of key District personnel (i.e., District Managers, Area Managers, Resource Chiefs, Operations Chiefs, etc.) toward incorporating recreation considerations into their action programs with particular emphasis on the Range Programs.

There seems to be a comprehensive awareness concerning such items as preservation and protection of aesthetic, natural, primitive, cultural, and other recreational values. Great progress is being made as evidenced by the fact that all three Districts visited are completing an archeological survey at most range improvement sites

prior to development, although the adequacy of these surveys is suspect because they are generally performed by untrained District personnel, and in most instances the individual sponsoring the project is doing the survey which sets up a situation where a strong bias could be introduced. Another encouraging sign is that new contracts include the stipulation which discourages "dropping the blade" when building fence, pipeline projects, etc.

However, there still seems to be a superficial commitment to protection of recreational values when recreation gets in the way of implementing desirable range improvement projects. For example, in one District, only one principal staffman felt it was necessary to have a landscape architect assist in the design of re-vegetation projects. The remainder of the key staff interviewed varied in opinions from "it is desirable" to "they (the landscape architects) are just another obstacle that would hold up the implementation of the project." Protection of archeological values still remains more lip service than real. Evidence of this is substantiated by the fact that the range program is unwilling to budget money specifically to cover survey and protection of cultural values impacted by range improvements.

In summary--awareness has arrived but commitment is lacking.

VII. EFFECTS OF THE LIVESTOCK GRAZING PROGRAM ON RANGE MANAGEMENT IN NEVADA

Introduction

In Nevada, the Bureau of Land Management administers 47,329,363 acres. (See Illustration 1.) Of this amount slightly over 44 million acres have been determined to be usable by livestock and nearly three million acres unusable by livestock. This latter category is comprised mainly of dry lake beds and steep, rocky, and inaccessible areas. Slightly over 97,000 AUMs have been reserved for wildlife, much of which has been designated as unusable by livestock.

I. Adjudication Problems

A. Suspended Nonuse

Carrying capacity as determined by range surveys amounts to 1,836,912 AUMs for cattle and sheep. (See Illustration 1.) Class I livestock grazing privilege qualifications statewide total 2,938,621 AUMs, an amount in excess of the carrying capacity by 1,101,709 AUMs. That is to say, Class I grazing privileges exceed the established carrying capacity of the range by 37.5 percent.

In comparison to surveyed carrying capacity of 1,836,912, licensed active use in 1972 was 1,869,304 AUMs--32,392 AUMs over carrying capacity. Another 6,528 AUMs of forage were permitted under Class II licenses and 77,406 AUMs were permitted under temporary non-renewable licenses. Total use permitted in 1972 was 116,326 AUMs over surveyed carrying capacity.

When adjudication of the range was accomplished and livestock use reductions were made, those AUMs above the surveyed carrying capacity of the range were placed in the category of suspended nonuse. Suspended nonuse AUMs statewide totaled 426,536 AUMs in 1972.

The difference in AUMs between Class I qualified use and suspended nonuse is recognized as licensed active use. At the option of the livestock operator, he may elect to use all, none, or any portion of his licensed active use. The portion not used is carried as licensed nonuse. In 1972, licensed nonuse amounted to 658,938 AUMs or about 26 percent of the licensed active use.

Examination of licensing records reveals there is a consistently abnormal amount of licensed nonuse. This can be interpreted as meaning the recognized licensed active use grazing privileges exceed the carrying capacity of the range--the degree of which may be in the magnitude of the 26 percent as shown by the 1972 records. Licensed nonuse may be activated at any time upon application by the operator. If the premise that failure to make full use of licensed active use qualifications is caused by lack of available forage, activation of nonuse by the operators would cause serious degradation of the existing total range resource. In some cases, licensed nonuse is 3.4 times greater than licensed active use, as in Coal Valley of Pony Springs Resource Area, Ely District, where the licensed active use of 193 AUMs would represent 131 acres of allotment area per AUM used. (See Illustration 2.)

Another example of great disparity occurs in the Delamar grazing unit. The surveyed range carrying capacity is 33,542 AUMs. The Class I qualifications are 54,043 AUMs; licensed active use, 17,731 AUMs; licensed nonuse, 16,903 AUMs; and 13,513 suspended nonuse AUMs. (See Illustration 2.) Activation of the nonuse AUMs would represent nearly a 100 percent increase in present use and the operator has a qualified demand in any increased amount of forage in the recognized grazing privilege demand identified as 13,513 AUMs of suspended nonuse. These problems are further discussed in the section on allotment management plans where restoration of all Class I grazing privileges is nearly always the number one objective of the AMPs.

There are disparities in the figures submitted by the Districts: licensed actual use, 1,869,304 AUMs; plus licensed nonuse, 658,938 AUMs; plus suspended nonuse, 426,536 AUMs; add to 2,954,778 AUMs which is 16,157 AUMs in excess of the total Class I qualifications of 2,938,621 AUMs. The categorized licensed use, and nonuse AUMs exceed the established carrying capacity by 1,117,866 AUMs. In other words, licensed actual use, nonuse, and suspended nonuse exceed established carrying capacity by 60.8 percent.

B. Wild Horse and Burro Use

Up to this time only the Carson City District has recognized the need for allocation of forage necessary to support wild horses and burros. They have allocated 1,819 AUMs--enough to support about 150 horses, yearlong. There has been no reduction in

licensed AUMs of livestock grazing in the three Districts visited though they jointly estimated a total of 7,630 horses, requiring an annual forage requirement of 91,560 AUMs. Equine populations may be increasing at an annual rate of 12 to 30 percent.

C. Temporary Non-Renewable Licenses

In 1972, 77,406 AUMs of livestock grazing were allowed under this category of licensing; another 6,528 AUMs of Class II grazing is issued to cover increased livestock numbers and/or extended season of use in excess of the licensed active use. Much of this use is provided for under "flexibility" in the grazing management plan.

D. Wildlife Use

Allocation of forage for wildlife shows a statewide total of 97,376 AUMs. Location of this forage is not identified within specific areas. It is assumed only big game animals were recognized. Public Land Statistics, 1971, reports 2,200 antelope, 740 bighorn sheep, 109,400 deer and 230 elk utilized Nevada national resource lands. Assuming the possibility of these being yearlong residents of national resource lands, approximately 271,440 AUMs of forage* would be required. Additional critical wildlife habitat requirements such as mating, nesting, birthing, rearing, or escape areas, need for cover, succulent vegetation, wet areas, etc., have not been recognized in allocation of forage or vegetative resources. Increasing

*Converted to cattle AUMs on the basis of five antelope or four bighorn sheep or five deer or two elk consuming forage equal to that of a cow.

numbers of wild horses and burros are adding to the demand on vegetative production.

E. Dominant Objective of Class I Grazing Privileges Restoration

(This is discussed under III B - AMPs, Establishment of Objectives.)

F. Class of Livestock and Season of Use

In Nevada, as in many western states, there has been a continuing trend to convert class of livestock from sheep to cattle. In doing so in Nevada, the season of use also has been changed in most cases. Areas formerly utilized as winter sheep areas are now predominantly spring, summer, and fall and sometimes winter, cattle ranges.

Vegetatively, many of the ranges are more suitable for sheep than cattle grazing. Initial reaction is that conversion from sheep to cattle is beneficial to browsing big game animals since the change removes a competing browser from the range. We did not find this true; actually the total utilization of all vegetative species, and particularly with continual year after year grazing during the vegetative growing season, has had severe adverse effects on the rangelands. Many of the class of livestock conversions were made at an arbitrary 5:1 ratio without regard for vegetative types.

C. Range Surveys

Based on the prevalence and magnitude of licensed nonuse and based on our observations of range conditions, the range surveys that have been made are grossly non-applicable to present range conditions.

Range surveys completed to establish Class I actual use, show great disparity between Class I demand and surveyed carrying capacity. Presently there is a great disparity between surveyed carrying capacity and actual use. It is believed there is also a great disparity between the former carrying capacity and present carrying capacity on the majority of national resource lands visited. Some of this has been because of invasion by pinon-juniper and brush types, but other vegetative types in many places have also deteriorated drastically.

II. Custodial Management Areas

A. Uncontrolled, Unregulated or Unplanned Livestock Use

The term "custodial management area" has been used to identify those allotments where neither a grazing management plan nor an allotment management plan has been initiated. In this situation, grazing licenses are issued with specification of number of animals and length of grazing season. The allotment is used as one pasture on a continuous year after year basis with no planned consideration for the physiological requirements of vegetation.

Under such use, due to varying palatability of the plants, selective grazing by livestock, location of water, variation in terrain and accessibility, and poor distribution of livestock, plant cover is thinned, undesirable vegetation increases and soil erosion occurs. This phenomena is widespread in the Districts visited in Nevada; many areas have suffered drastically and abuse is continuing.

We did not identify the acreage of national resource lands on which custodial grazing management is occurring. However, it is in the majority. There are 871 livestock grazing allotments on Nevada national resource lands. Only 76 allotments have had allotment management plans initiated on them. Some of these AMPs are not fully implemented for lack of fencing and/or needed water development.

B. Conversion of Class of Livestock and/or Season of Use

In custodial management areas, there has been a more obvious demise of grass and forb species and a greater increase in shrub species than in areas being administered under a grazing management plan. In many of the areas herbaceous understory is nearly non-existent.

C. Lack of Management Following Improvements

Improvements in the form of chemical treatment of shrubs, chaining, and plowing and seeding accomplished under regular programming have been used as a substitute for proper range management. Following treatment, management has not been applied, and anticipated goals have not been achieved. Seedings have not had a chance to become established, or if established, have not had the management necessary to maintain them. Brush is invading or has already become dominant in many crested

wheatgrass seedings. In some areas, chemical treatment of sagebrush has resulted in rabbit brush becoming the dominant vegetative species at the expense of a remnant herbaceous understory.

D. Supplemental Feeding

Supplemental feeding to provide minerals, vitamins, or even proteins that are deficient in range forage is compatible with sound range and animal husbandry practices. However, supplemental feeding to provide sufficient energy to keep livestock alive causes degradation of vegetative and other range resource values. We observed areas where hay has been fed to animals on the national resource lands and many areas where protein supplement is provided regularly. The value of shrubs such as cliff rose, bitterbrush, winterfat and four-wing saltbush, all palatable high protein plants common in Nevada, has not been given recognition in the management of rangelands. These plants, if management recognized their physiological requirements, could provide much of the nutritional requirements of livestock and add immeasurably to big game habitat values.

III. Allotment Management Plans

A. Inadequate Multiple-Use Data to Develop AMPs

Bureau Manual 4112.1583, Correlation states: "although the AMP is basically a grazing management plan, the livestock use

made of an area is influenced by the use and development of other resources. Needs of watersheds, wildlife habitat, frail lands, recreation and forested areas will be considered on the basis of existing information. The needs of other resource uses may impose constraints upon livestock use and influence the grazing system developed. Grazing use may be modified as additional data on resources becomes available. (Refer to 1608)." Interpreted, this means: 'If other resource information is available, include it in the AMP; if not available, go ahead with the AMP and we will modify it as information needed for proper management of other resource values become available.'

Under present Bureau operating conditions where land, energy and separate resource activity planning are dominating personnel workload activities, the allotment management plan is about the only instrument guiding the management of national resource lands. Under the guidelines provided by the above Manual section, the majority of AMPs have been formulated without input concerning other resource values on the allotment. This is particularly true for those AMPs developed prior to about 1970. Those AMPs developed in 1970 and subsequent to 1970 generally are more multiple-use oriented and are more likely to enhance and maintain the public values expected of management of the national resource lands.

B. Establishment of Objectives

The majority of AMPs reviewed in Nevada had as the number one objective, restoration of all Class I grazing privileges. Usually rather specific objectives relating to increased livestock forage production are stated, such as: "Provide additional 5,718 AUMs by intensive management and completing 55,000 acres of revegetation" (Emery Conaway Ranch, Caliente whose recognized demand is 19,323 AUMs, present licensed use and nonuse is 9,342 AUMs).

In this same allotment write-up, it is stated:

> "The Conaway Allotment is a critical yearlong deer range that provides hunting to southern Nevadans as well as local Lincoln County people.
>
> Deer numbers are down at present, but some consideration should be given to providing additional forage. During the adjudication process sufficient forage for existing numbers of deer was provided for."

Indian rice grass with seedripe date of July 15 was selected as the key species. Cliffrose, the critical browse species for the deer was not considered as a key species. Seedripe times of four-wing saltbush, black sage, winterfat and ephedra, important big game browse species, likewise were not considered. Need for management to correct existing watershed problems was mentioned, but no specific provisions were made for solving the problem.

Overall, objectives of the AMPs reviewed were poorly attuned to present-day Bureau objectives of multiple-use resource management and the public's expected output of sustained high level yields of varied resource values.

Generally, the objectives were dominated by, and oriented toward, satisfying the wishes, even dreams, of the livestock operators.

C. Design of Grazing Plan and Choice of Key Species

In numerous instances designed grazing plans reveal a lack of full knowledge of the principles of rest-rotation grazing management, or lack of ability to interpret and/or apply the principles, or a lack of faith in achieving objectives by the total application of the principles of rest-rotation grazing management.

The following errors were noted in the design of grazing management plans.

1. Failure to provide a sufficient number of treatments to meet the physiological requirement of mixed vegetative species. With seedripe of desired vegetative species varying from May 15 to October 15 and the key species, Indian rice grass with seedripe time of September 1, only one seed trampling time was designed into the plan. Where there is wide disparity in seed ripening time of desirable vegetative species, two seed trampling treatments must be designed into the plans; in one year at an early date and in the succeeding year the seed trampling treatment can be established to accommodate the later maturing species.

2. Greater attention needs to be directed toward selection of key species. Many of the range areas examined are also

used during the fall, winter, and early spring months when the plants are dormant. Nutritional values of grasses are inadequate to sustain animals during these periods of dormancy and forbs are almost non-existent. During these periods, the nutritional requirements of animals, both wild and domestic, are sustained by shrubs, whose protein levels are three to four times greater than the dry grasses that may be available.

Shrubs such as four-wing saltbush, bitterbrush, cliffrose, black sage, winter fat, and ephedra are some of the common shrubs in Nevada and their growth and reproductive requirements must be recognized in the design of a grazing plan. Because their food reserves are stored primarily in the twigs and stems, they require a full year of rest periodically.

For the important role that shrubs perform in sustaining livestock grazing in Nevada, they are not receiving the consideration they merit. In addition, the well-being of big game population is almost totally dependent on an abundance of palatable, nutritious, and vigorous shrub species.

In the Ely Springs Allotment, on the actual use records submitted by the rancher, he wrote that he had fed 34,000 pounds of supplement blocks from January 1 to February 28, 1973. Much of this protein could be provided by management which provides for the needs of shrub species.

3. Plant phenological data is frequently missing or quite incomplete in the AMPs. In such cases, it is impossible to design the proper grazing management plan for the area of land involved.

4. In the formulation of the grazing plans the sequential arrangements of various treatments are often wrong. This will prevent success in achieving the objectives established for vegetation. For clarity in discussion, a poorly designed grazing plan is presented below:

Barclay Unit
Summer Use Area
(June 16-Sept. 30)

Treatment	6/16 — 7/15 — 9/30	
A	GRAZE	Graze for livestock production
B	REST	Rest to restore plant vigor
C	[illegible]TRAMPLE	Rest until seedripe time, then graze

Key Species: Orhy & Ager
seedripe time: July 15

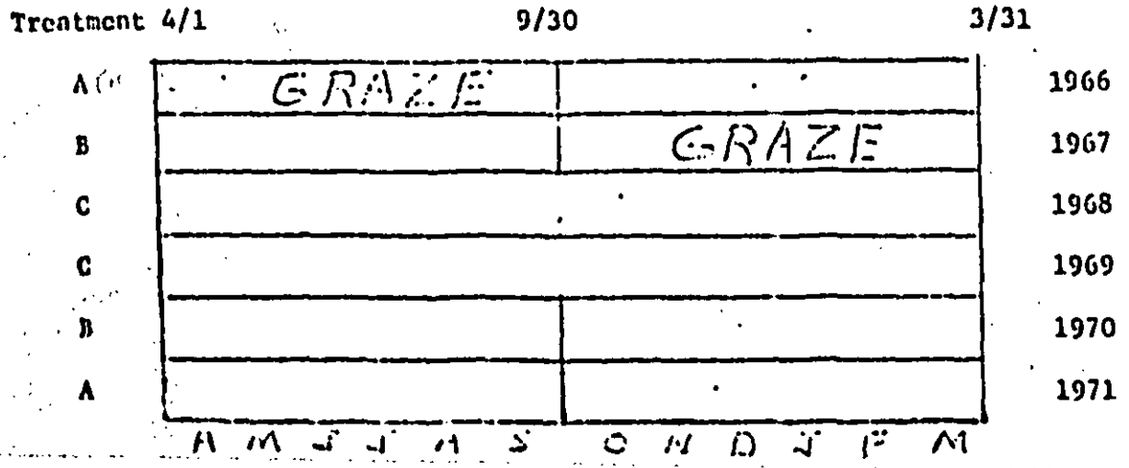
In the above grazing plan Treatments B and C should be reversed. Two undesirable aspects will result from the formula as written:

(1) no seedlings will become established following Treatment C because the seedlings will not be established firmly enough to withstand the grazing that will occur the following year when Treatment A is called for. (2) Treatment A calls for grazing during the vegetative growing period. Treatment C, occurring during the previous year, will have removed the previous year's growth. Previous year's growth is desirable to have in spring grazing periods as it protects the new growth and is particularly desirable for protection of new seedlings.

Also where crested wheatgrass is involved, as it is in this grazing unit, the presence of previous year's growth is helpful in reducing the incidence of grass tetany. Tetany is frequently a problem in crested wheatgrass seedings.

In the Sand Springs Allotment an illogical grazing plan has been formulated thusly:

Sand Springs Allotment
Season of Use: Yearlong



Key Species: Grass
Seedripe Time: August 1

For unexplained reasons, after one cycle of grazing treatments, the formula is then reversed. Even in the basic formula, seedripe time of the key species is not recognized. Cattle go in for the seed trampling treatment two months after seedripe time. Where the formula is reversed, this would actually result in yearlong grazing in one pasture. For clarity, dates have been placed to the right of the formula; the yearlong grazing would occur with B A treatments in 1970 and 1971. Then in accordance with the plan, the pasture would again be grazed in 1972 during the same growing period as in the previous year.

There are numerous other examples of grazing management plans that do not conform to the principles of rest-rotation grazing management.

The AMP prepared for the Moorman Ranch is so complicated and poorly described no one in the Ely District was able to understand or explain it. The need for revision is recognized.

The AMP for the Hockethorn Allotment is another example of an illogical grazing management plan and no phenological data is presented to support the four treatments that are to be applied to a seven-pasture allotment.

5. Another problem of frequent occurrence is the division of an allotment into pastures of unequal carrying capacity. In rest-rotation grazing the pastures must be of almost equal carrying

capacity or else the grazing plan will either have to be broken or livestock numbers must be reduced to the carrying capacity of the pasture with the lowest carrying capacity.

6. There are examples where in the dividing of an allotment into pastures, altitudinal changes in elevation were not treated correctly. Where significant changes in altitude occur the variations in plant phenology must be accommodated. This is accomplished by dividing the pastures so there is about the same amount of elevational characteristics in each pasture, i.e., some low, medium, and high elevations in each pasture as compared to having all the low area in one pasture, all the medium elevation area in another pasture, and all the high elevation area in another pasture.

7. Production and accumulation of vegetative material as litter is important to soil fertility and is highly important in reducing soil erosion. This factor is seldom mentioned in the AMPs and receives practically no consideration in the design of the grazing formula. Erosion is of serious consequences in all of the Nevada areas visited; improvement and protection of watershed values should be of the highest priority in livestock grazing management.

D. Flexibility

Many AMPs permit too much flexibility right from the start in regard to amount of livestock use, season of use, and numbers of livestock. The Mustang Allotment was adjudicated to 2,514 AUMs in 1966.

The range survey shows 884 AUMs available. When the AMP was initiated in 1968, the user was permitted to utilize 1,200 AUMs, activating about 320 suspended AUMs to be carried on a temporary non-renewable basis. (These figures do not tally out, but they are what the records show.)

With initiation of an AMP on the Rye Patch Ranch Allotment, the plan proposed to increase cattle numbers from 240 to 300 head. In the Melody Allotment where actual use had been 754 AUMs with 716 AUMs in suspended nonuse, actual use increased to 1170 AUMs in 1971 after initation of the plan in 1970. Additional notes in this file include: "Broke system last of April, 1970, the first year of the plan. Broke system in 1971 by putting cattle into the rest field at turnout time." In a letter to the file on August 11, 1971, the last sentence says, "Revision of this plan is eminent (sic) to free more forage area for spring grazing, a critical time for the Aitken Ranch."

Under the flexibility section of numerous AMPs, the operators are granted great discretion in establishing their own seasons of

use and degree of utilization of forage, for example, "Livestock can remain in open pastures after the seedripe time as long as there is feed left." "The pastures will be utilized to the fullest extent possible." "The limiting factor will be the condition of the livestock as determined by the user." "Under this plan grazing use treatments A & B should be as heavy as possible."

BLM Manual 4112.15C3b, Flexibility states: "Do not consider flexibility unless the user has demonstrated that he is a good range manager." Our field observations indicate there is little evidence to support granting of as much flexibility as has been assigned to the livestock operators.

Many base properties are in vegetatively poor condition characterized by dense stands of rabbitbrush, head cuts, and deep gullies. Some operators operate on a water base situation; others on a land base situation. With a two-month base property and a 10-month public land requirement, it appears some of the base properties are in a condition of being incapable of supporting livestock the required period of time.

E. Data for Evaluation of the Grazing Management Plan

Inadequate data is being gathered for proper evaluation of the grazing plan. Studies initiated at inception of the grazing plan are not always being updated in accordance with established schedules. Vegetative types other than grass are not given consideration.

F. Supervision

Supervision of AMPs is significantly inadequate and cooperation on the part of the ranchers is very poor. Some references were made to this in (D) above. Notes in the Ely Springs AMP file state: "(2/29/73) There was continued trespass into all closed fields during the summer and fall months." "(10/25/72) The pasture was to receive complete rest this season. However, cattle have been in continual trespass all season long. Some trespass was due to the fact that the allotment had changed ownership; early spring use was authorized due to inadequate livestock water in Pasture No. 4. Cooperator was putting in a new cement water trough; gates reportedly were repeatedly left open by recreationists travelling through the area, and it appears to me some were intentional; and floods reportedly washed out some of the fences."

In the same folder, the following is written in the actual use record: "This actual record does not show the six or seven head of horses that made use of the hospital pasture and Pasture No. 1 all year. Also, it does not show the use made of calves over six months of age--about 285 for two months."

The following notations were made pertaining to examination of the Mustang Allotment: "On March 9-11, 1971, cattle were in all pastures except the south pasture. Cattle were weak and forage heavily utilized." The writer recommended change in the grazing system and closer supervision.

In the Sand Springs Allotment, information in the file identifies problems of cattle being in the wrong pastures and not being moved in accordance with scheduled moves. A note of April 5, 1972, says "Cattle have not been moved into Pasture No. 1." The user had been advised on February 26 and again on March 17, to move them. In the same allotment a large number of cattle were in the northwest pasture on March 9-11, when they should have been out by February 1, as the pasture was slated for rest that season.

In summary, inadequate supervision of allotments is evident. In approximately 20 allotments viewed on the ground, only one pasture of those scheduled for rest during 1973 had actually been rested.

C. Construction of Improvements to Meet Objectives

Fencing, water development, chaining, herbicide treatment, plowing and seeding are the primary facilities installed or work accomplished in the allotments examined. Little attention or consideration beyond that of facilitating livestock grazing use was observed in association with these activities. All resource values that can be corrected should be compiled and corrective actions taken as funds and manpower permit. Other evaluation team members describe many of the deficiencies in their reports.

IV. Miscellaneous

A. Invading Species

Notable among invading species are sagebrush, rabbitbrush, greasewood, and pinyon-juniper. There are probably only a few areas where management will be successful in converting these vegetative types to productive areas of mixed vegetative species because desirable vegetative species are frequently absent. Better grazing management is needed on most of the areas that have been treated; present management should be designed to give every possible advantage to desirable vegetative species still existing; it should be recognized extentive cultural treatment is going to be needed on some areas.

B. Construction of Improvements - Reservoirs

Only one reservoir was observed which was fenced with livestock water piped to a trough outside of the fenced area. This was the only reservoir having acceptable esthetic, wildlife habitat, water quality, and good public image standards.

C. District and Area Staffing

There are insufficient personnel to administer the resources, particularly the vegetative resources. The present number of people cannot be expected to properly administer areas of the magnitude for which they are now responsible.

D. Areas of Livestock Removal

Two areas were observed where obviously livestock grazing should be terminated -- the Murray Canyon Watershed and the Duckwater area. Reasons for such actions are discussed by the

wildlife representative of the study team.

Big game winter ranges are in poor shape. However, rather than fencing them at this time, it is recommended that management in accordance with the physiological needs of vegetation, particularly forbs and shrubs, be initiated.

E. Scattered Pattern of AMPs

Apparently AMPs were designed for and implemented in those areas where a cooperative livestock operator was involved. This has resulted in managed allotments being very scattered and at great distances from other managed allotment. Too much travel and time must be expended to provide efficient and effective supervision.

F. Personnel Tenure and Experience

A significant problem is tenure of personnel, particularly that of experienced and effective area managers. Few remain in one area longer than three years because there is much competition for their talents and the opportunities for advancement elsewhere are numerous. With only a relatively short time in the area, a few of the simple problems are solved, but lack of familiarity and shortness of time prevents solving the complex problems. More incentive is needed to extend tenure of the resource managers; many of the resource areas have sufficient complexities and responsibilities to warrant a grade of GS-12.

G. Allotment Allocations

(No comment because inadequate information available.)

H. Funding Imbalance

Improvement in range management will not occur until funding and manpower allocations are increased instead of decreased as has occurred for the last six to seven years.

1. Field Personnel Attitudes

Behavior of the operators in abiding by the grazing management plan in regard to moving their cattle at the scheduled times, respecting established rest periods, and conforming to numbers prevents satisfactory and successful rest-rotation management. Cooperation by the rancher is highly important to achieving objectives. One wonders if the ranchers have understanding of the whys and wherefores of the operation of rest-rotation grazing management. However, it is believed part of the problem may stem from the flamboyant granting of flexibility. Many of the BLM personnel express in their written and spoken thoughts the great hazard of having any wolf plants on the rangeland, on native ranges as well as on ranges with introduced herbaceous species. Much emphasis is placed on not letting wolf plants take over the range. The attitudes of both Bureau personnel and the rancher must change if grazing management is going to achieve the standards now expected on public lands.

With public attitudes and actions as they are today, it should be noted we are not doing the livestock operator a favor by granting them grazing use privileges which result in adverse impacts to the varied resources of the national resource lands. Some

short-term benefits may be realized by delaying the difficult decisions and actions. However, on a long-term basis livestock grazing on public lands is being jeopardized by the present inadequate management.

It is difficult to identify any one cause of the extensive range problems in Nevada. An obvious contributor to the cursory management is the Bureau manpower and financial resources formerly available for range management being rather drastically reduced during recent years and additional responsibilities having been assigned to those remaining in this aspect of resource management.